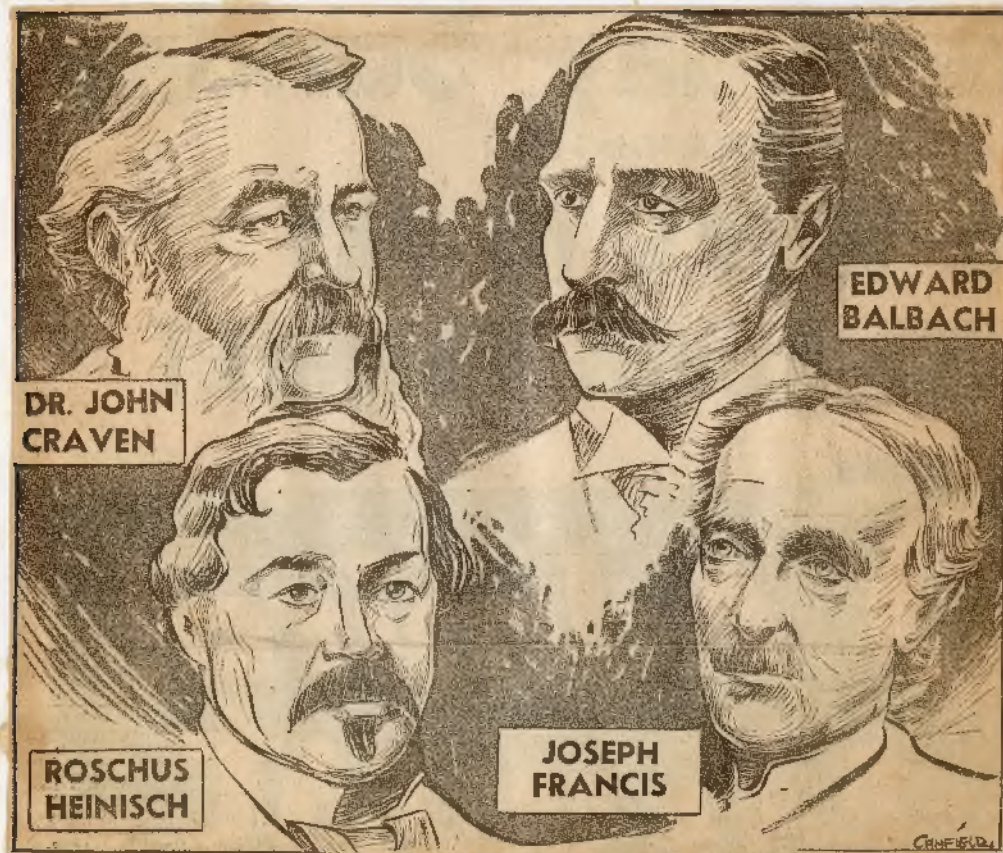




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This State Has De-veloped Many

To select the most important in-ventors New Jersey has produced is a task most historians and writ-ers hesitate to undertake. Ask per-sons familiar with the background of this state to name the most important inventors and they come up with at least 30 different names. Thomas A. Edison is the only one common to all lists. A check of books and newspaper columns re-veals more than 100 names when head-lined as leading inventors.

The study of the history of in-vention in New Jersey is a window opening on the economic develop-ment of the state. For nearly 200 years, our economy was primarily agricultural. A native of Burling-ton County, Charles Newbold, pat-ented the first iron plow in Amer-ica, in 1789, and had it cast at Hanover Furnace on Rancocas Creek. Farmers refused to use it for fear it would poison the soil. The original model is in the New York State Museum in Albany.

Many other agricultural imple-ments invented and patented by Jerseymen are exhibited in the museum of old farm machines at the New Jersey College of Agri-culture in New Brunswick. A Bests plow, patented by John Bests of Flemington in 1828 and used in Central Jersey for many years, was one of the first imple-ments given to the college farm museum.

Most famous of our inventors of farm implements was Edwin Stevens, sixth son of Col. John Stevens, and founder of Stevens Institute of Technology in Hoboken. The importance of his in-ventions has been forgotten in the greater fame of the Stevens con-tributions to transportation. More than 25 New Jersey inventors of farm implements, including plows, reapers, cultivators and seed plant-ers, are reported by Carl Wood-ward, an agricultural historian.

Isaac Dripps

Transportation history in this crossroad state owes much to Isaac Dripps, who with Robert L. Stevens invented the engine pilot, or cow catcher. Born in 1810, he was brought to America in infancy by his Scotch-Irish parents and ap-prenticed at 16 to Thomas Hollo-way, largest manufacturer of steamboat machinery in Philadel-phia.

When Col. John Stevens im-ported an English locomotive for the Camden & Amboy Railroad, the 21-year-old Dripps had at-tained such a reputation as a me-chanical engineer that he was selected to assemble and run the John Bull, although he had never before seen a locomotive. For the trial run he built a tender, and later the cow catcher.

For 21 years Dripps was in charge of locomotive construction in the Stevens yards in Hoboken. In the 1850s he designed and built a wide-tread locomotive for run-ning on two different gauged tracks. In later life he was de-signer and builder of railroad shops for the Pittsburgh, Fort Wayne & Chicago Railroad and for the Penn-sylvania Railroad, inventing in-numerable mechanisms and tools which he never patented. He died in 1882.

Joseph Francis

A contemporary of Isaac Dripps was Joseph Francis of Toms River, who found in New Jersey recog-nition for his invention of the "life ear" used in shipwrecks. Boston-born, in 1801, he was fascinated by ships and built, when only 11, a boat with cork in its ends capable of keeping afloat with four men on board even when filled with water.

Apprenticed to a relative who was a shipbuilder, Francis built a fast unsinkable rowboat which won him an award in the 1818 Me-chanics' Institute Fair in Boston. About 1837 after further experi-ments he produced an unsinkable rowboat which met severe tests.

bringing him orders from this country and abroad. He continued to design and sell vessels of many kinds, having them built by the Novelty Iron Works of New York City.

From 1938 to 1841 Francis worked on a covered wooden car or boat to be swung on a bawser to land persons from a wreck, but it was shattered in the first trial. A new line of experiment resulted in his development of a boat with galvanized iron sides. Later he obtained a patent for the use of corrugated metal in boat construction. In January, 1950, in a howling snowstorm off the Jersey coast, his "life car" was put to the test in the wreck of the immigrant ship *Ayrshire*, all but one of 200 passengers being saved.

From 1855 to 1863, Francis was in Europe, patenting and introducing his life saving inventions. Returning he settled in Toms River. He was a founder of the American Shipwreck and Humane Society out of which grew the U. S. Life Saving Service. Shortly before his death in 1879, he was honored by President Harrison and Congress with a gold medal for his life saving efforts.

Roschus Heinisch

In the first half of the 19th Century ships from Europe brought a steadily increasing stream of immigrants to our Eastern seaboard. Many of them were skilled artisans with fine technical training. Such a person was Roschus Heinisch, a surgical instrument maker from Paris, born in Bavaria in 1801. Arriving in Newark about 1829, he was one of the first members of the German colony here, opening a cutlery factory on High street.

His invention of tailors' shears of malleable iron faced with steel fashioned here found a wide market in this country and even abroad. They were further improved by his son Henry, both father and son holding several patents for this invention. Jacob Wiss got his start in Newark working for Heinisch, and when, in 1914, 40 years after the death of Roschus Heinisch, J. Wiss & Sons bought out the facilities of

R. Heinisch's Sons, Wiss became the largest producers of fine shears and scissors in the world.

Edward Balbach

While the firm of R. Heinisch's Sons was expanding rapidly in the 1840s, another German technical expert was attracted to Newark by the flourishing jewelry industry. Forty-four-year-old Edward Balbach, a chemist from Baden was impatient with government restrictions on his business of refining precious metals. He migrated to America, bringing his 8-year-old son, Edward Jr., destined to become a prominent business man and inventor. The father built in 1850 on the banks of the Passaic a smelting works for the salvage of silver and gold from the floor sweepings of Newark's many jewelry establishments.

Young Edward shared his father's interest in chemistry, learned the business from the ground up. He became a partner when the firm of Edward Balbach & Son was formed in 1864. Known as Edward Sr. after the death of his father in 1889, he developed the Balbach desilverizing process, patented both in this country and in Europe. This technique took the place of a tedious and costly method previously used for the separating of gold and silver from silver-lead ores, revolutionizing the entire smelting industry. The output of mines in the Rocky Mountain States and Mexico was brought to the Balbach plant in the Newark Bay area in ever increasing quantities.

Edward Balbach also invented retorting and tilting furnaces. In 1881 he built in Newark the first commercial plant in the United States for the refining of copper by electrolysis. After his father's death, Edward bought an estate in Bernardsville, dividing his time between it and New York, where he died in 1910.

Dr. John J. Craven

The development of communication systems followed closely on the growth of New Jersey's great transportation and metal working industries. An important first step was the building of Morse's telegraph line from Philadelphia to New York. Almost forgotten today is the key contribution of a Newark

and Jersey City physician, John J. Craven. Dr. Craven was born in Newark in 1822, to very poor parents who apprenticed him when very young to a carpenter.

In his early 20s, Craven was made superintendent of construction and repairs at the Passaic Chemical Works, a plant he had helped to build. Here he developed the keen interest in science that was to direct his reading and observation and to shape his life. In 1845 he went to work in the construction department of the Magnetic Telegraph Co., immediately becoming absorbed in the pressing problem of how to carry telegraph wires over large streams of water. Becoming acquainted in 1847 with gutta-percha, newly introduced from Malaya, young Craven experimented with it as insulation for copper wire, submerged in Round Creek. A second trial in the Passaic, with ends connected to live wires on shore, proved the efficiency of his invention.

In 1848, he laid the cable under the Hudson between Jersey City and New York, thus completing the New York to Washington line of the Magnetic Telegraph Co. A patent was refused to him on technical grounds.

After taking part in the California gold rush, Craven studied medicine and opened a practice in Newark. As a Union Army surgeon in the Civil War, Dr. Craven became personal physician to the imprisoned Jefferson Davis.

In 1867, Dr. Craven removed his practice to Jersey City where he became interested in the sanitation of slaughter houses. He invented machinery for converting waste from the abattoirs into salable by-products and also developed refrigerating apparatus for cold storage houses, freight cars and steamships. These inventions were patented bringing him the means to spend the later years of his life in comfort. He died at Patchogue, L. I., in 1893.